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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,946	11/30/2001	Brig Barnum Elliott	BBNT-P01-151	5946

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EXAMINER	
PEREZ, JULIO R	

ART UNIT	PAPER NUMBER
2681	

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/998,946	ELLIOTT ET AL.	
	Examiner	Art Unit	
	Julio R Perez	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14-18 and 32-34* is/are allowed.

6)☐ Claim(s) *1-11,13 and 19-31* is/are rejected.

7)☐ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/30/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1- 11, 13, 19 – 31, are rejected under 35 U.S.C. 102(e) as being anticipated by Ady et al. (6694149).

Regarding claims 1 and 7, Ady et al. disclose a method and computer medium for conserving energy in a node in a wireless network, comprising: receiving a first powering-on schedule from another node in the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices receive switch on schedules); and selectively powering-on at least one of a transmitter and receiver based on the received first schedule (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the system is comprised of several network devices spread in a geographic area and the communication among them may be via fiber optic, coaxial cable, satellite or wireless; Further, the network devices receive an instruction of when to be on for reception of coming data).

Regarding claim 2, Ady et al. disclose, wherein the wireless network comprises an ad-hoc, multi-node wireless network (col. 2, lines 51-65; Fig. 1, a configuration of network devices arranged in a matter that corresponds to nodes in an ad-hoc).

Regarding claim 3, Ady et al. the method, wherein the wireless network comprises a wireless sensor network (col. 2, lines 24-65, the network devices detect their command to be on or off).

Regarding claim 4, Ady et al. disclose the method further comprising: producing a second powering-on schedule based on the first powering-on schedule (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices receive an instruction of when to be on for reception of coming data).

Regarding claim 5, Ady et al. disclose the method, further comprising: transmitting the second powering-on schedule to other nodes in the network when the transmitter is in a powered-on state (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the command for powering may be sent to a group of network devices).

Regarding claim 6, Ady et al. disclose a node in a wireless network, comprising: a transmitter; a receiver configured to receive a powering-on schedule from another node in the network; and a processing unit configured to selectively power-on at least one of the transmitter and receiver based on the received powering-on schedule (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the system is comprised of several network devices spread in a geographic area and the communication among them may be via fiber optic, coaxial cable, satellite or wireless; Furthermore, the

network devices receive, corresponding to providing reception, an instruction of when to be on for reception of coming data).

Regarding claims 8 and 13, Ady et al. disclose a method and system of conveying messages in a sensor network, comprising: organizing a sensor network into a hierarchy of tiers (col. 3, lines 53-67, the network devices may be grouped in sections around a geographical area); transmitting one or more transmit/receive scheduling messages throughout the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the schedule to switch to active modes are conveyed around the groups of networks); and transmitting and receiving data messages between nodes in adjacent tiers based on the one or more transmit/receive scheduling messages (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, data is transported through the networks when the network devices are scheduled to stay active for receiving data).

Regarding claim 9, Ady et al. disclose the method, wherein the transmit/receive scheduling messages comprise time schedules for powering-on and powering-off transmitters and receivers at each of the nodes in the adjacent tiers (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, switch on schedules may be conveyed to a network device within the same group or to a different group).

Regarding claim 10, Ady et al. disclose the method, wherein a destination of the data messages comprises at least one data collection point (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices serve also as data collection centers).

Regarding claim 11, Ady et al. disclose the method, wherein the at least one data collection point resides in a lowest tier of the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43; Fig. 1, the network devices serving as collection parts may be present in different locations from each other).

Regarding claims 19, 23, 24, Ady et al. disclose a method, a node system, and a computer medium of forwarding messages at a first node in a network, comprising: receiving scheduling messages from a plurality of nodes in the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the system is comprised of several network devices spread in a geographic area and the communication among them may be via fiber optic, coaxial cable, satellite or wireless; Further, the network devices receive an instruction of when to be on for reception of coming data); selecting one of the plurality of nodes as a parent node (col. 3, lines 24-43, when a there is data to be transmitted the network device in the network device is put in alert, and in turn, remains as the main device); and selectively forwarding data messages to the parent node based on the received scheduling message associated with the selected one of the plurality of nodes network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the system is comprised of several network devices spread in a geographic area and the communication among them may be via fiber optic, coaxial cable, satellite or wireless; Further, the network devices receive an instruction of when to be on for reception of coming data).

Regarding claim 20, Ady et al. disclose the method, further comprising: organizing nodes in the network into a hierarchy of tiers (col. 3, lines 53-67, the network devices may be grouped in sections around a geographical area).

Regarding claim 21, Ady et al. disclose the method, wherein the plurality of nodes resides in a higher tier than the first node (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43; Fig. 1, the network devices serving as collection parts may be present in different locations from each other).

Regarding claim 22, Ady et al. disclose the method, wherein the data messages are destined for a data collection point residing in a lowest tier of the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43; Fig. 1, the network devices serving as collection parts may be present in different locations from each other).

Regarding claims 25 and 31, Ady et al. disclose a method and computer medium for conserving power at a first node in a network, comprising: powering-on a receiver to listen for scheduling messages (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices are ready to receive switch instructions from the control messages provided to power on and be ready fro receiving data); receiving scheduling messages from at least one node in the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices receive commands to switch on); and selectively powering-on and powering-off the receiver based on a schedule associated with one of the received scheduling messages (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, further, the network devices receive, corresponding to providing reception, an instruction of when to be on for reception of coming data) .

Regarding claim 26, Ady et al. disclose, further comprising: organizing nodes in the network into a hierarchy of tiers (col. 3, lines 53-67, the network devices may be grouped in sections around a geographical area).

Regarding claim 27, Ady et al. disclose the method, further comprising: selectively powering-on and powering-off a transmitter based on the schedule associated with one of the received scheduling messages (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the system is comprised of several network devices spread in a geographic area and the communication among them may be via fiber optic, coaxial cable, satellite or wireless; Furthermore, the network devices receive, corresponding to providing reception, an instruction of when to be on for reception of coming data).

Regarding claim 28, Ady et al. disclose, further comprising: transmitting data messages to a node in a lower tier of the network when the transmitter is powered-on (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43; Fig. 1, the network devices serving as collection parts may be present in different locations from each other).

Regarding claim 29, Ady et al. disclose, further comprising: transmitting scheduling messages to nodes in a higher tier of the network when the transmitter is powered-on (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43; Fig. 1, the network devices serving as collection parts may be present in different locations from each other and may receive instruction of the schedule to switch on).

Regarding claim 30, Ady et al. disclose a node in an ad-hoc, wireless network, comprising: a receiver configured to receive scheduling messages from at least one node in the network (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices receive switch on schedules; the control messages corresponding to schedule the devices to power on); and a processing unit configured to: power-on the receiver to listen for the scheduling messages, and subsequent to receipt of at least one of the scheduling messages, selectively power-on and power-off the receiver based on a schedule associated with one of the scheduling messages (col. 2, lines 24-36; col. Col. 3, lines 16-23; col. 5, lines 19-43, the network devices are ready to receive switch instructions from the control messages provided to power on and be ready fro receiving data).

Allowable Subject Matter

3. Claims 12, is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: The prior art fails to teach forwarding data messages to a sensor node in a lower tier when received from a higher tier.

4. Claims 14-18, 32-34, are allowed.

Prior art has not been found that suggests or renders obvious the limitation of independent claims 14,18 and 32 disclosing organizing the multi-mode tiers that

provides a transmit or receive schedule at a first tier for controlling the powering-on and off of transmitters and receivers in adjacent nodes to the first selected tier to transmit in accordance to the receive/transmit schedule and identifying a node as a parent with a first data and further with a second data including a schedule for transmission of messages from the parent node to associated sensor nodes and consequently a second schedule for receiving messages on the parent.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the art with respect to energy efficiency mechanisms in ad-hoc and multi-node networks.

US Pat. No. 6381467 to Hill et al.	Managing Ad-Hoc networks
US Pat. No. 6192230 to Van Bokhorst et al.	Data having power saving function
US Pat. No. 6292508 to Hong et al.	Managing power in frequency hopping
US Pat. No. 6414955 to Clare et al.	Distributed topology for wireless networks
US Pat. No. 5583866 to Vook et al.	Packets in a local area network
US Pat. No. 6564074 to Romans	Power management in a wireless LAN
US Pat. No. 6208247 to Agre et al.	Sensor network using relayed communication

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio R Perez whose telephone number is (703) 305-8637. The examiner can normally be reached on 7:00 - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 703-308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP
9/24/04

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